REMARKS/ARGUMENTS

Applicant respectfully requests further examination and reconsideration in view of the above amendments and the arguments set fully below. In the Office Action mailed March 13, 2008, claims 1-12 have been rejected and objected to. In response, the applicant has provided the following remarks, amended the specification, amended claims 1-12, and added claim 13. Accordingly, claims 1-13 are now pending. Favorable reconsideration is respectfully requested in view of the above amendments and the arguments set fully below.

Comments

Within the Office Action it is stated that the name of the inventor is not the same in the filing documents and the Information Disclosure Statement by the Applicant. Applicant respectfully directs the Examiner's attention to the Transmission of New Declaration and Request for Updated Filing Receipt filed June 20, 2007, that indicates that subsequent to the filing of the Declaration with the above application on September 20, 2006, it was brought to the undersigned's attention that the last name of the inventor had changed from Paaso to Ruistola. Further in this filing, the applicant requested an updated filing receipt reflecting the inventor's current name. The applicant has now received this updated filing receipt. Furthermore, please list the inventor's name correctly in subsequent correspondences as Juha Ruistola.

Specification

Within the Office Action it was stated that the Abstract of the Disclosure does not commence on a separate sheet in accordance with 37 C.F.R. 1.52(b)(4). By the above amendments, the applicant has provided an amended Abstract presented on a separate sheet apart from any other text.

Claim Objection

Within the Office Action, claims 1-12 have been objected to as they contain open "...characterized..." which does not follow U.S. practice. By the above amendments, the applicant has removed the use of "...characterized...", and respectfully requests that the Examiner withdraw his objections to claims 1-12 accordingly.

Rejections Under 35 U.S.C.§102

Claims 1-3, 5-7, and 9-11 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2002/0184245 to McPherson (hereinafter McPherson). The applicant respectfully disagrees with this rejection.

The McPherson reference teaches a database that includes a vertex array containing coordinates of a three-dimensional mesh, a face array that contains pointers to target coordinates in the vertex array, the target coordinates defining a polygon in the three dimensional mesh, a free vertex container that identifies elements in the vertex array that do not contain vertices, and a free face container that identifies elements in the face array that do not contain pointers (McPherson, Abstract). In McPherson, the vertex array 24 includes a number of elements 32 that contain coordinates of the 3D mesh or an indication that the element does not contain coordinates (McPherson, Para. 15). Further, the McPherson reference also teaches an index like face array 28 having numbered elements 34 that include pointers to coordinates in the vertex array 24 or an indication that the corresponding element of the vertex array does not contain pointers (McPherson, Para. 18). While the McPherson reference utilizes the vertex array and face array to generate a database 22 by a process 20 that stores coordinates of the 3D mesh 10 in elements of the vertex array 24 and stores in the face array 28, pointers to coordinate in the vertex array 24 (McPherson, Para. 23), McPherson does not teach forming a hierarchical data structure whose hierarchy is based on the division of the vertices in the image face, the

nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part of an index array, in reducing the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

In fact, McPherson merely discloses a method for reducing memory capacity when processing polygon models, with a free vertex container and a free face container, holding empty vertices positions and pointers respectfully. In McPherson, any empty space can be occupied by a newly added vertex. However, McPherson does not disclose a hierarchical data structure, which reduces the polygon model, while maintaining the linearity of the index array.

In contrast to the teachings of McPherson, the method of the present application for processing a computer aided polygon model and device for processing a computer aided polygon model includes directing indirect pointing from a hierarchical data structure at a vertex array, formed by pointing at an index array with elements of the hierarchical data structure and further by pointing from the index array at the vertex array. The hierarchical data structure includes, coded in its hierarchical structure, the detailed information included in the vertex array, this information being used as the basis for the reduction of the polygon model. This system and method facilitates quick processing of a polygon model as it eliminates the need to go through the elements of the vertex and index arrays in conjunction with the reduction, but the vertices determined by the hierarchy can be removed by modifying the index array on the basis of the detailed information included in the hierarchical data structure (present application, paras. 10 through 11).

Referring to Fig. A of the present application, a linear vertex array 304A, a linear index array 306A and a hierarchy data structure 302A are depicted. The elements 312A, 314A, 316A, 318A, 320A, of the linear index array 306 point at elements 324A, 326A, 322A, 328A, 330A of the vertex array 304A, respectively (present application, paras. 24 through 25). The

hierarchal data structure 302A includes elements 334A, 336A, 338A, 340A, 342A, 344A, 346A and 348A, and the element 334A of the hierarchal data structure 302A is a root node that is on the uppermost level in the hierarchy. The root node 334A comprises pointers at the nodes 336A, 338A of the next lowest level in the hierarchy (present application, paras. 26 through 27).

Referring to Figs. 3A and 3B, the polygon model part to be presented graphically is reduced by means of the hierarchical data structure 302A, maintaining the linearity of the index array 306A. Fig. 3 shows an example of a final solution where the polygon model part to be presented graphically, as presented in Fig. 3A, has been reduced (present application, paras. 34 through 35).

The McPherson reference does not teach the hierarchical data structure as taught and claimed in the present application, as this hierarchal data structure is utilized in the present application in order to reduce the polygon model part, which is to be presented graphically. This reduction is performed while maintaining the linearity of the index array. In this context, the linearity means that the index array forms an uninterrupted data structure in the memory space. Thus, data to be presented graphically can be picked up efficiently, due to the compact memory localization.

The independent claim 1 is directed to a method for processing a computer aided polygon model, comprising forming a vertex array which is linear in static and comprises the vertices of the image elements of the polygon model, forming an index array which is linear in the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements in the vertex array, and which index array comprises an active part, the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically, forming additional hierarchical data structure whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the

hierarchical data structure pointing at elements of the active part of the index array, and reducing the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array. As discussed above, McPherson does not teach forming the hierarchical data structure, reducing the polygon model part to be presented graphically of the hierarchy data structure, while maintaining the linearity of the index array. For at least reasons, the independently claim 1 is allowable over the teachings of McPherson.

Within the Office Actions it is stated that the arguments used to reject the independent claims 5 and 9 are analogous to the argument used to reject the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of McPherson, accordingly, the applicant respectfully submits that the independent claims 5 and 9 are also allowable over McPherson for the same reasons as discussed above with respect to the independent claim 1. Furthermore, the new independent claim 13 recites a distribution medium readable by computer, wherein the distribution medium embodies the computer program of claim 9. Accordingly, claim 13 is also allowable for the same reasons as discussed with respect to the independent claim 9.

Claims 2-3, 6-7, and 10-11 are dependent upon the independent claims 1, 5 and 9. As discussed, above, the independent claims 1, 5 and 9 are allowable over the teachings of McPherson. Accordingly, claims 2-3, 6-7, and 10-11 are also allowable as being dependent upon an allowable base claim.

Rejections Under 35 U.S.C. §103

Claims 4, 8 and 12 have been rejected under 35 U.S.C.§103(a) as being unpatentable over McPherson as applied to claim 1 above, in view of U.S. Patent Publication No. 2022/0008698 to Pentkovski et al. (hereinafter Pentkovski). Claims 4, 8 and 12 are dependent upon the independent claims 1, 5 and 9. As discussed above, the independent claims

1, 5 and 9 are allowable over the teachings of McPherson. Accordingly, claims 4, 8 and 12 are also allowable as being dependent upon an allowable base claim.

For these reasons, applicant respectfully submit that all of the claims are now in a condition for allowance and allowance of an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at (414) 271-7590 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

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